



February 15, 2006

California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Attention: Ms. Colleen Hunt

RE: Additional Info. to Interim Corrective Action Plan
Quik Stop Market No. 35, Case No. 1TSR275
816 McMinn Avenue, Santa Rosa, California
(CCI Project No. 12032-2)

Dear Ms. Hunt:

On behalf of Quik Stop Markets, Inc., Compliance & Closure, Inc. (CCI) hereby presents this additional information to our October 20, 2005 Interim Corrective Action Plan, which was requested in the Regional Water Quality Control Board's (RWQCB) December 28, 2005 letter.

1. *Interim Corrective Action Approach*

CCI proposed a "two phase" approach for implementing the Interim Corrective Action Plan (ICAP), which includes: 1) installing a ten-spargе well, microsparge ozone injection system; and 2) installing three additional off-site wells to monitor the progress of the groundwater remediation at the site. CCI intends to conduct both phases of the ICAP at the time the field work is initiated. CCI will first install the ten onsite sparge wells, followed immediately by the installation of the three street-located wells. As requested by the RWQCB, all the sparge wells will be logged using the Unified Soil Classification System. Further, all field work will be conducted under CCI's site safety plan, which is attached.

2. *Phase 1 Remediation System*

As you are aware, CCI proposed to install ten sparge wells into the A-aquifer. In addition, five of the sparge wells, located on the south and southwest sides of the site, will be constructed as double sparge wells, with sparge points in both the A and B aquifers. The rationale for installing ten sparge wells in the shallow A-aquifer is to address the original release of fuel that directly impacted the shallow A-aquifer, as well as to tackle the current residual contamination, which is found mainly in the shallow aquifer at the site. Contamination in the B-aquifer was found only in

wells MW-1B and MW-3B, which are both on the south side of the site, in the general vicinity of the former and current Quik Stop fuel tanks. The north side of the Quik Stop site is the up-gradient direction in the A-aquifer and appears to be the cross-gradient direction in the B-aquifer; therefore it is unlikely that significant groundwater contamination exists on that side of the site. Furthermore, manual switch valves will be installed on the double sparge wells in order to direct the ozone to a specific aquifer. This type of system set-up allows ozone to be injected into the double sparge well either within the A aquifer or the B-aquifer, but not into both aquifers at the same time. CCI intends to inject the ozone into the shallow A-aquifer for a majority of the time the system operates. From time to time (a few weeks out of each quarter), CCI will switch the valves to inject ozone into the B-aquifer in order to remediate the groundwater within the lower aquifer at the site.

In its ICAP, CCI originally proposed to place sparge wells on the west side of the site, along the east side of McMinn Avenue; however, due to the cost of drilling and trenching within the McMinn Avenue right of way, CCI now proposes to locate the three sparge wells on the Quik Stop property. This should be more cost-effective and should also provide more efficient remediation of the area around monitoring well MW-3 and the fuel tanks.

CCI proposes to monitor the offsite groundwater conditions at the three new proposed well locations on the west side of McMinn Avenue and the other offsite well locations (MW-6, MW-9 and MW-2B). As the groundwater contaminant concentrations at the Quik Stop site decrease, it is anticipated the contaminant concentrations in the offsite wells will also decrease. It should be noted the Triple S Tire site, located at 1124 Sebastopol Road, has existing groundwater contamination as well. The Triple S groundwater plume and the Quik Stop plume are commingled at some point to the west and southwest. It is CCI's opinion that it may be prudent for the responsible party of the Triple S site to install some B-aquifer wells to the west of McMinn Avenue to further define the dissolved plume.

3. *Ozone Injection Requirements*

CCI intends to collect baseline data from all the existing onsite and offsite monitoring wells. As required by the RWQCB, CCI will collect well parameters in the field, including: dissolved oxygen, oxidation-reduction potential, temperature, conductivity and pH. In addition, groundwater samples will be collected from each well and analyzed for bromide, bromate (reporting limit no higher than 10 micrograms per liter (ug/L)), acetone, dissolved hexavalent chromium (laboratory reporting limit no higher than 5 ug/L), dissolved vanadium, dissolved selenium, and dissolved molybdenum. These compounds will be analyzed at a state certified laboratory using appropriate EPA Methods 7000/6010B for inorganic analysis and EPA Method 300.0 for bromide analysis.

CCI intends to use existing site wells (MW-1, MW-2, MW-3, MW-5, MW-7, MW-8 and the new A-aquifer well, located on the west side of McMinn Avenue) to monitor the progress of remediating the A-aquifer at the site. The B-aquifer will be monitored using wells MW-1B, MW-3B, and the two deep wells (upper and lower B-aquifer) which are to be located on the west side of McMinn Avenue.

4. *Evaluation for the Potential of Vapor Migration*

As the RWQCB is aware, CCI intends to install a micro ozone injection system (Kerfoot Technologies C-Sparge® System®) using several Spargepoints, placed at selected locations and depths throughout the site. The RWQCB has requested the sparging system be reviewed for potential vapor migration. CCI has, in the past few years, installed (with the RWQCB's approval) five of these systems at various sites in northern California. CCI's experience with this system and Kerfoot's design technology have shown that in-aquifer ozone injection does not pose a danger of vapor migration from this system.

The ozone generator is designed to generate very small (approximately 50 micrometers in diameter) bubbles of ozone. The master control unit injects 3 to 5 cubic feet per minute (CFM), with an ozone concentration of 80 to 350 part per million by volume (ppmv) for 8 to 12 minutes at each Spargepoint, at controlled, rotating intervals. The injection quantity is low, less than 400 grams per day. The master control panel is also equipped with an ozone detection sensor, which is designed to shut down the system if concentrations of ozone are detected above 1 to 5 ppm inside the master control panel. The sparge wells and the master control panel are connected with continuous (no splicing) 3/8-inch diameter, high density tubing inside a 3-inch diameter PVC pipe, which is placed in a shallow trench. At each Spargepoint, the well head assembly consists of two, one-way check valves. Once the ozone enters the well, the one-way check valve prevents ozone from migrating out of the well. The ozone micro bubbles are then forced into the surrounding water-bearing formation under very low pressure (between 15 and 30 psi). The micro-fine bubbles produced at the master control panel are released directly into the groundwater at each Spargepoint. The encapsulated ozone reacts with dissolved compounds, producing harmless by-products of carbon dioxide and water. On the basis of this information and previous system performance, vapor monitoring beyond the Quik Stop site appears to be a large and unnecessary expense.

To further monitor the system and site conditions, CCI will use a Drager tube (0.05 parts per million (ppm) to 1.0 ppm ozone Drager tube) to check for ozone around the master control panel and the well head of selected Spargewells at the startup of the system and then quarterly thereafter. As is CCI's standard operating procedure, all work discussed herein will be performed according to a site-specific Health & Safety Plan.

5. *Phase II – Perimeter Well Installation*

CCI's ICAP proposed installing three wells on the southwest side of McMinn Avenue to monitor the groundwater conditions at various depths within the A and B aquifers. CCI proposed to install the deepest of the three wells to a depth of 75 to 80 feet. This proposed depth is not in the C-aquifer but at the bottom of the B-aquifer (*PES Environmental, Inc., Remedial Investigation Report, Roseland Area HVOC Investigation, February 14, 2002*). Since none of the Quik Stop wells are currently screened at that depth, CCI proposed monitoring that depth interval in a down-gradient direction from the Quik Stop site. Until data from that well can be collected and analyzed, it would be premature to propose installing a well into the C-aquifer (found at depths between 105 and 122 feet) at this time.

CCI intends to install these three offsite wells using the same drilling protocol proposed in CCI's *July 17, 2002 Additional Soil and Groundwater Investigation Work Plan*, which was approved by the North Coast RWQCB. CCI intends to use a hollow stem auger to install the three wells, and conductor casing will not be used. The two B-aquifer wells will be drilled through the clay aquitard which separates the A and B-aquifers. There will be some communication between the two aquifers for a very limited time. The amount of communication between the two zones will be limited to the time that the wells are constructed and grouted to the surface. Once the wells are installed, the wells will be developed using a vacuum truck, which has a vacuum line attached to a ¾-inch PVC pipe. The pipe is lowered to the bottom of each well to remove silt and sand which has accumulated during well construction. Several volumes of well water will also be removed. The extracted water will be placed in 55-gallon drums, labeled and left at the site. The well will be allowed to recharge for 24 hours before sampling.

During drilling of the three offsite wells, soil samples will be collected from the deep well (lower B-aquifer well) at 5-foot intervals to the bottom of the well. In general, CCI intends to analyze every 10-foot sample (10 feet, 20 feet, 30 feet, etc.) and any soil sample exhibiting a positive reading on the PID meter. It is anticipated that at least 10 and possibly up to 20 soil samples will be collected for laboratory analysis. The samples will be preserved at the laboratory using EPA Method 5035 and analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethyl benzene and total xylenes (BTEX) and fuel oxygenates using EPA Test Method 8260.

The other two shallow wells, located on McMinn Avenue, will be placed approximately 5 feet from the deep well. Based on the deep well boring log, the shallow wells will be drilled to a target depth, but will not be individually logged, given the "clustered" location, nor will soil samples be collected from these two wells due to their proximity to the deep well and lateral stratigraphic soil/sediment changes are not probable at that short distance. The boring for the

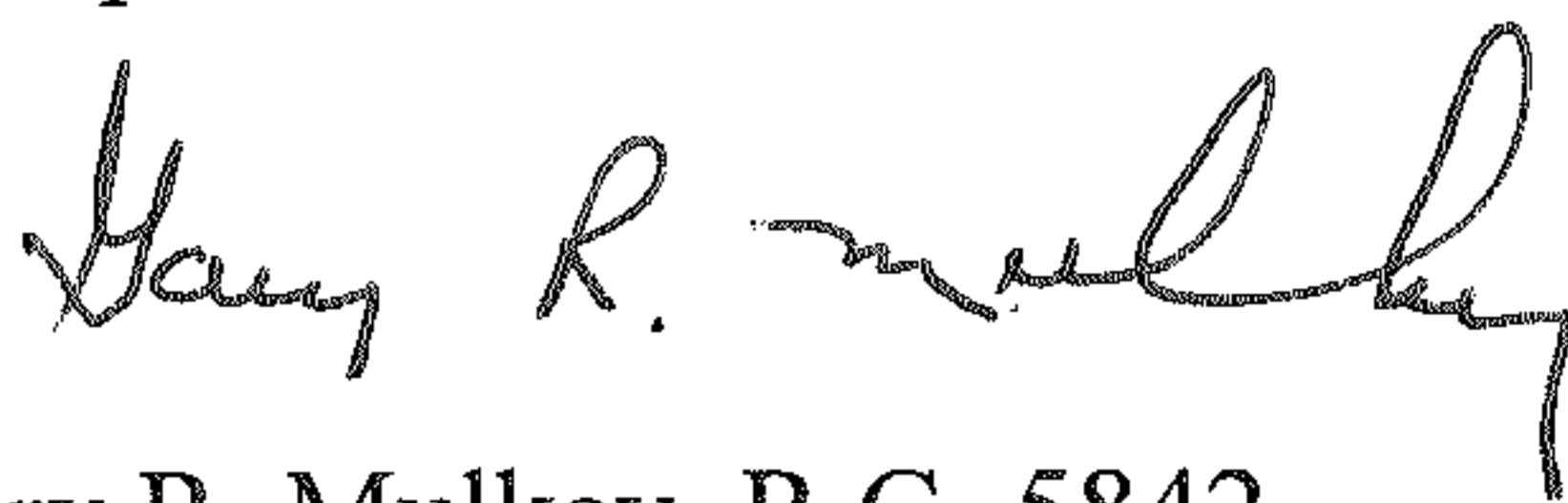
deep well will be drilled in the following manner: the drill rig will be positioned over the boring location, and the hollow-stem auger will be used to advance the hole to the desired sampling depth. A CCI geologist will log the deep borehole by collecting relatively undisturbed soil/sediment samples at 5-foot intervals to the targeted depth. Soil/sediment samples will be collected using a pre-cleaned, modified, California split-spoon sampler with internal 2-inch diameter by 6-inch long brass liners. The sampler will be driven 1-1/2 feet ahead of the auger with a 140-pound, rig-operated hammer. The sampler will then be removed and disassembled into its component parts. The soils encountered will be characterized using the Unified Soil Classification System.

6. *Decommissioned Water Supply Well*

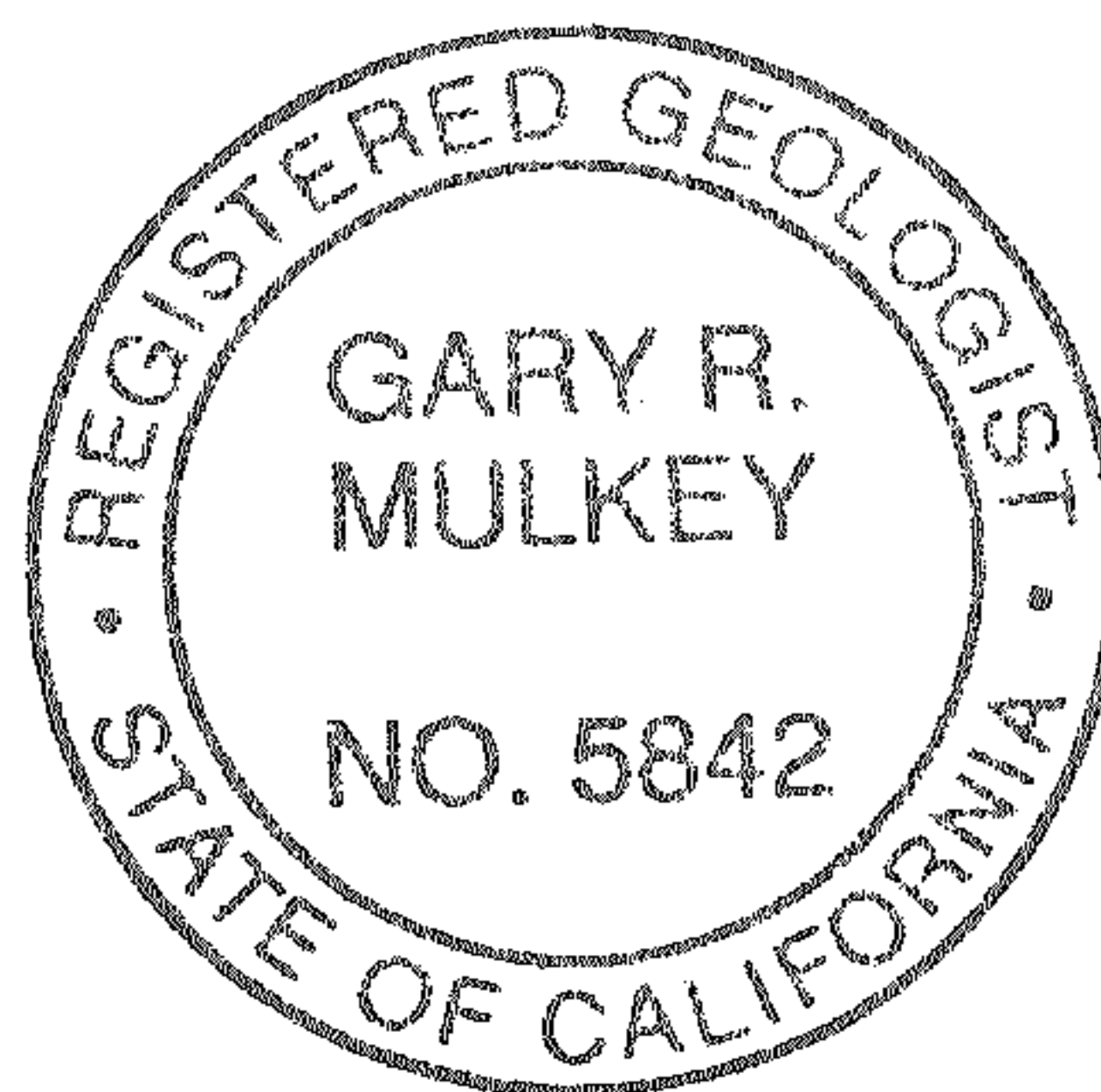
The decommissioned water well at the Quik Stop site was brought to Quik Stop's attention by Mr. Bill Erdei of the RWQCB several years ago. At that time, it was unknown whether the well had been destroyed. The well construction and destruction information referenced in the RWQCB's December 28, 2005 letter was presented to Mr. Erdei. That information documents that the well was destroyed by filling it with cement. The exact location of the well is not currently known. CCI will attempt to locate the well.

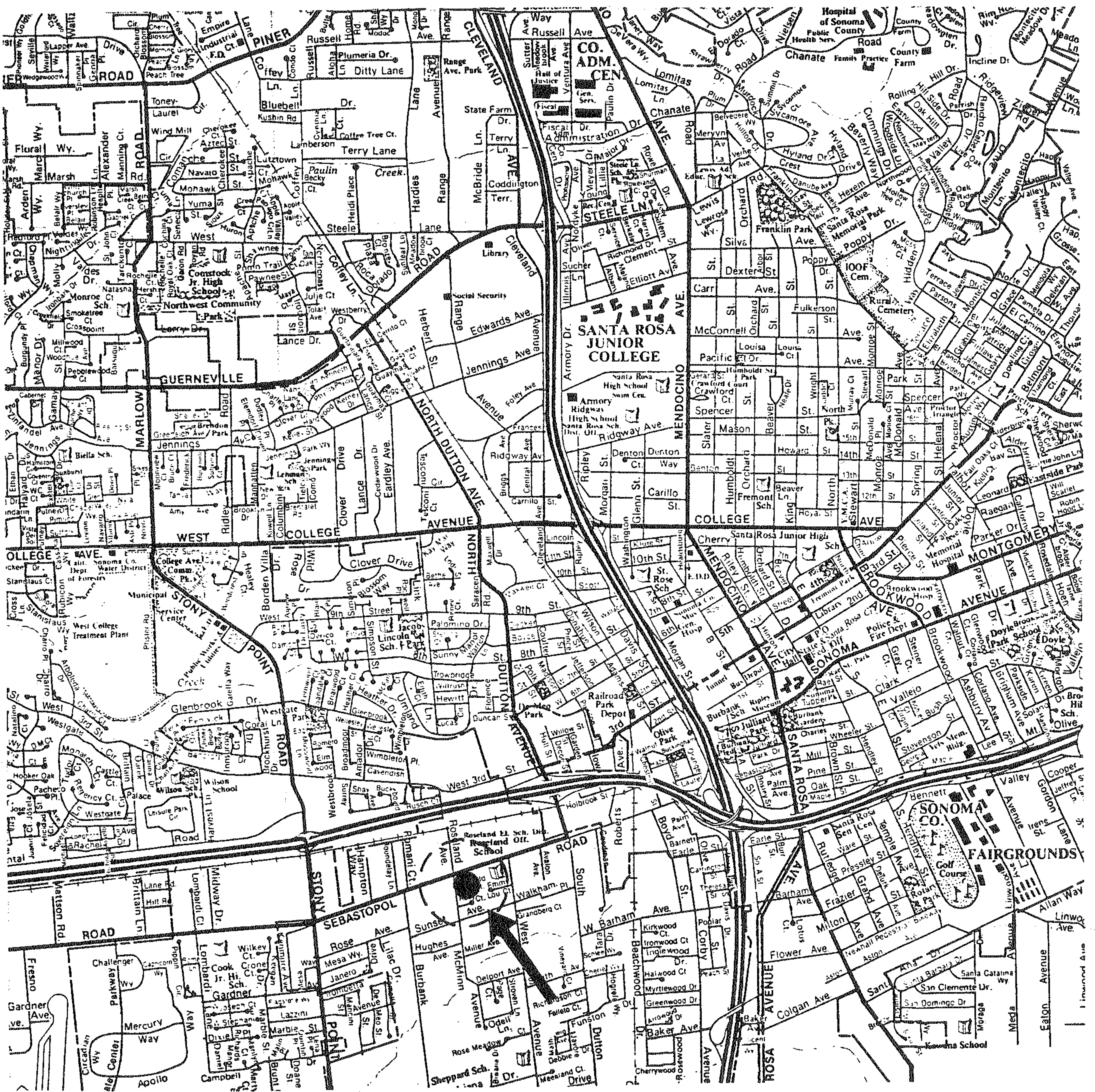
CCI is prepared to begin work on this project upon receiving approval from the North Coast Regional Water Quality Control Board. If you have any comments or require additional information, please call our office at (925) 648-2008.

Sincerely,
Compliance & Closure, Inc.

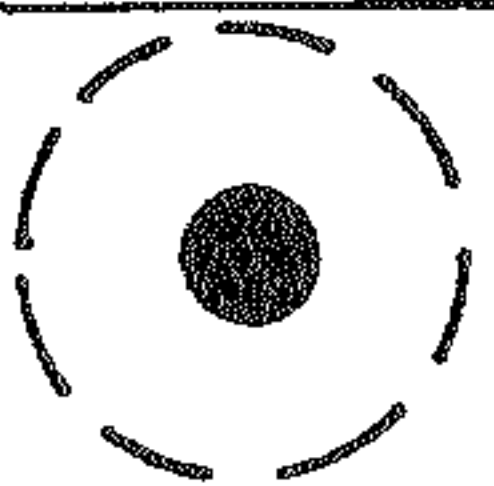


Gary R. Mulkey, R.G. 5842

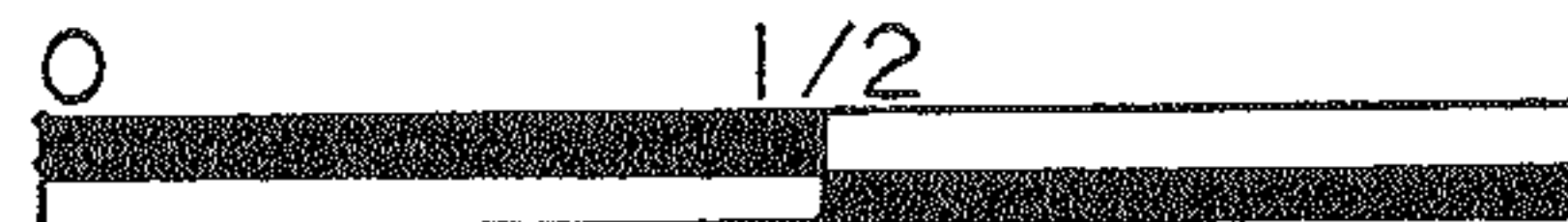




LEGEND





site location



approximate scale in miles


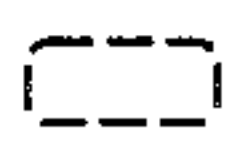





Base: Compass Maps, Inc.

reviewed by: 	SITE VICINITY MAP		 Compliance & Closure, Inc.	
approved by:	QUIK STOP MARKETS, INC.			
drawn by: GM	816 McMINN AVENUE			
job no. 12032	SANTA ROSA, CALIFORNIA		date: 1/28/94	drawing no. FIG. 1

SEBASTOPOL ROAD

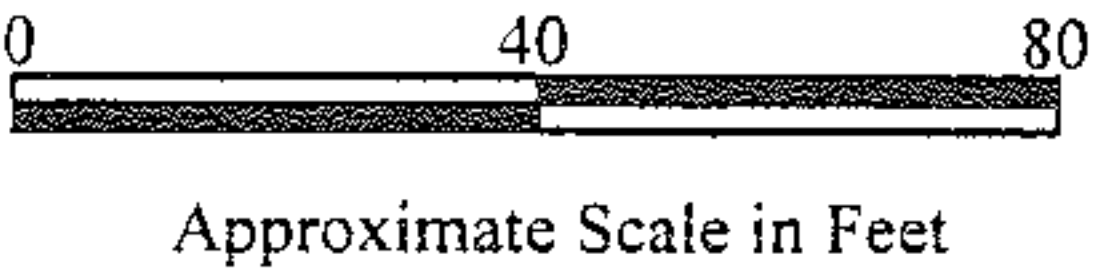
Legend

-  MW-6 Monitoring well
-  Fuel tank location
-  Proposed Single Sparge Well Location
-  Approximate Radius of Influence from Sparge Well
-  Proposed Double Sparge Well Location

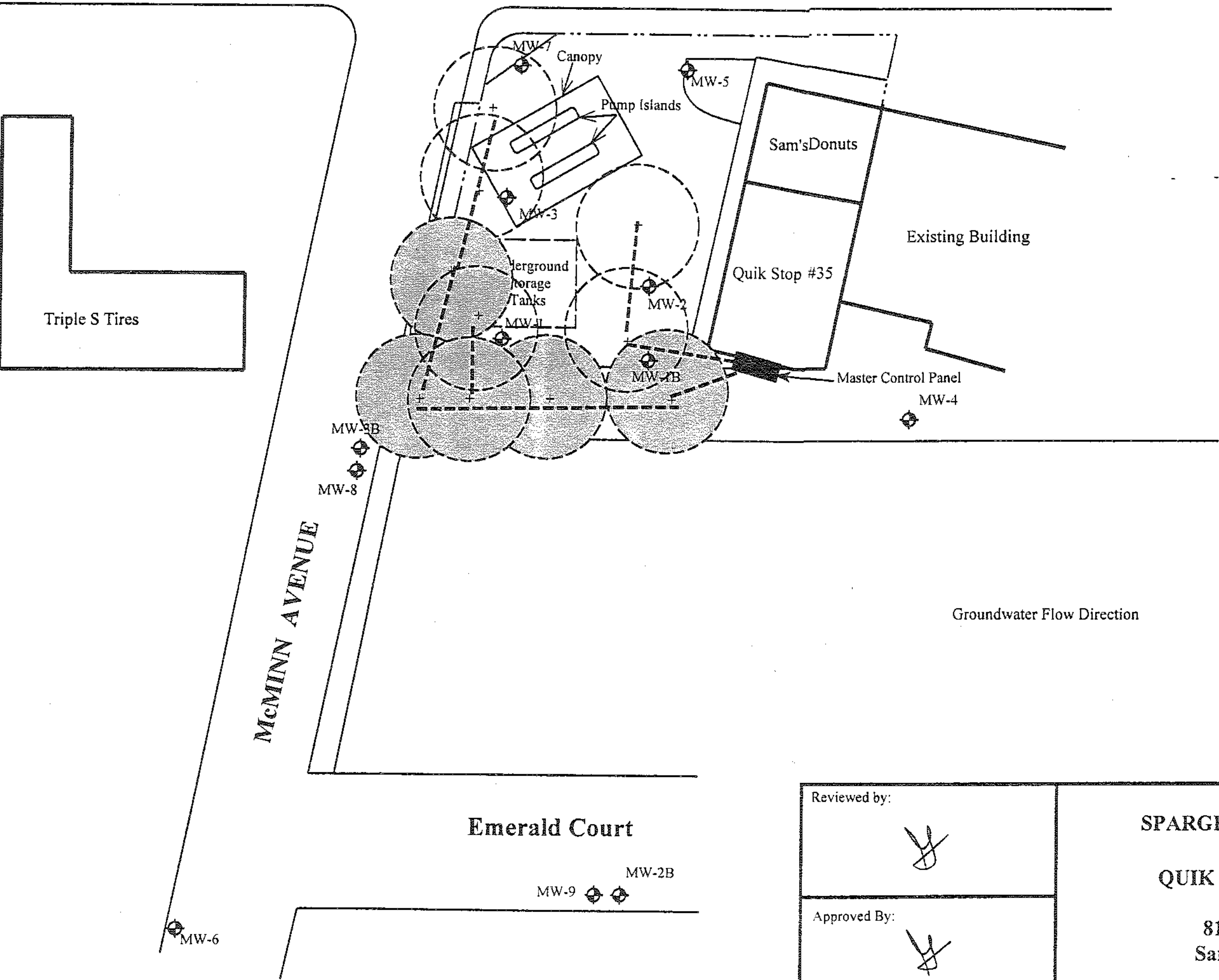
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Groundwater Flow Direction



CRWQCB Global ID: T0609700721



Reviewed by:

Approved By:

SPARGE WELL LOCATION MAP

QUIK STOP MARKET No. 35

816 McMinn Avenue
Santa Rosa, California



Job No.:
12032-3

Drawn By:
NLN

Date:
02/8/06

Fig. #:
2

COMPLIANCE & CLOSURE, INC.

SITE SAFETY PLAN

**816 McMINN AVENUE
SANTA ROSA, CALIFORNIA**

COMPLIANCE & CLOSURE, INC. SITE SAFETY PLAN

Owners Name: Quik Stop Markets, Inc.

Site Address: 816 McMinn Avenue

Santa Rosa, California 95401

Directions to Site: Take HWY 101 north to HWY 12, go west to Dutton Avenue. Make a left turn at Dutton and proceed to Sebastopol Road. Make a right turn on Sebastopol and go 1/2 mile to McMinn, site is on the left.

Consultant On Site: Compliance & Closure, Inc.

Phone Number: (925) 580-2258

Site Safety Officer: Gary Mulkey

Phone Number: (925) 580-2258

Type of Facility: Perating Convience store

Site Activities: ☒ Drilling ☐ Construction ☐ Tank Excavation ☐ Soil Excavation ☒ Work In Traffic Area
☐ Groundwater Extraction ☐ Vapor Extraction ☒ In Situ Remediation ☐ Above Ground Remediation
☐ Other: _____

Hazardous Substance

Name (CAS#)	Expected Concentration <input type="checkbox"/> Soil <input checked="" type="checkbox"/> Water <input type="checkbox"/> Air	Health Affects
<u>Benzene (71432)</u>	<u>< 100 ug/L</u>	<u>Carcinagen-see page 4</u>
<u>Ethylbenzene (100414)</u>	<u>< 100 ug/L</u>	<u>See page 4</u>
<u>Total Xylenes (1330207)</u>	<u>< 100 ug/L</u>	<u>See page 4</u>

Physical Hazards

☐ Noise ☐ Excavations/Trenches
☒ Traffic ☒ Other Cars - working in parking lot. Also working on McMinn Avenue
☐ Underground Hazards
☐ Overhead Hazards

Potential Explosion and Fire Hazards (Flammable Range = 1% to 10% Gas Vapor): N/A

Level Of Protection Equipment

☐ A ☐ B ☐ C ☒ D ☒ See Personal Protective Equipment

Personal Protective Equipment

R = Required A = As Needed

<u>R</u> Hard Hat	<u>R</u> Safety Eyewear (Type) <u>Safty Glasses</u>
<u>R</u> Safety Boots	<u>Respirator (Type)</u>
<u>R</u> Orange Vest	<u>Filter (Type)</u>
<u>Hearing Protection</u>	<u>R</u> Gloves (Type) <u>Nitrol</u>
<u>Tyvek Coveralls</u>	<u>Other</u>
<u>5 Minute Escape Respirator</u>	

SITE HAZARD INFORMATION

FC 1006 (05-11-90)

Monitoring Equipment on Site

☐ Organic Vapor Analyzer

☒ PID with lamp of 10 eV

☐ Oxygen Meter

☐ Draeger Tube _____

☐ Combustible Gas Meter

☐ Passive Dosimeter

☐ H₂S Meter

☐ Air Sampling Pump

☐ W.B.G.T.

☐ Filter Media _____

Site Control Measures Traffic cones for work in Quik Stop Parking lot. City of Santa

Rosa approved traffic plan for work on McMinn Avenue.

Decontamination Procedures Wash all drilling equipment withalconox & water. Drum all
waste water. Drum all soil cuttings.

Hospital/Clinic Memorial Hospital Phone (707) 546-3310

Hospital Address 1165 Montgomery Drive, Santa Rosa, CA 95402

Paramedic 9-1-1 Fire Dept. 9-1-1 Police Dept. 9-1-1

Emergency/Contingency Plans & Procedures Call 9-1-1 or take person to hospital by car.

Site Hazard Information Provided By: Gary Mulkey

Phone Number: (925) 580-2258

Print

Signature

Date: 2-15-2006

WARNING CONCENTRATIONS

Chemical	CAS #	PEL	Warning Concentration	VP	eV	Solubility	Density
___ Acetone	67641	750 ppm	100 ppm	266 mm	9.69	Miscible	0.80
<u>X</u> Benzene	71432	1 ppm	4.68 ppm	75 mm	9.25	0.18 %	0.88
___ Chloroform	67663	2 ppm	50 ppm	160 mm	11.42	0.3 %	1.50
___ Coal Tar Naphtha	65996794	None	Variable	5 mm	N/A	Insoluble	N/A
<u>X</u> Ethylbenzene	100414	100 ppm	0.25 ppm	7.1 mm	8.76	0.015 %	0.87
___ Hexane	110543	50 ppm	1400 ppm	124 mm	10.13	0.014 %	0.66
___ Hydrogen Sulfide	7783064	10 ppm	0.3 ppm	20 atm	10.43	2.9 %	N/A
___ Methylene Chloride	750092	100 ppm	25 ppm	150 mm	11.35	1.3 %	1.33
___ Methyl Ethyl Ketone	78933	200 ppm	4.3 ppm	70 mm	9.48	27 %	0.81
___ PCBs	53469219	0.5 mg/m ³	N/A	0.001 mm	N/A	Insoluble	1.44
___ Petroleum Distillates	8002059	400 ppm	Variable	40 mm	N/A	0.04 %	N/A
___ Phenol	108952	5 ppm	0.1 ppm	0.36 mm	8.5	8.4 %	1.07
___ Tetrachloroethylene	127184	25 ppm	4.68 ppm	14 mm	9.32	0.015 %	1.63
<u>X</u> Toluene	108883	100 ppm	0.17 ppm	22 mm	8.32	0.05 %	0.87
___ 1,1,1, Trichloroethane	71556	350 ppm	20 ppm	100 mm	11.25	0.07 %	1.34
___ Trichloroethylene	79016	25 ppm	21.4 ppm	53 mm	9.47	0.1 %	1.47
___ Vinyl Chloride	75014	1 ppm	260 ppm	2530 mm	9.9995	Slight	0.92
<u>X</u> Xylene	1330207	100 ppm	1.3 ppm	9 mm	8.56	0.00003 %	0.86

N/A = Not Available

CAS # = Chemical Abstract Services Number

PEL = OSHA Permissible Exposure Limit

VP = Vapor Pressure

Pesticide	CAS #	PEL	Warning Concentration	VP	Solubility
___ Aldrin	309002	0.25mg/m ³	N/A	0.000006 mm	Insoluble
___ Carbaryl	63252	5mg/m ³	Odorless	0.005 mm	0.004 %
___ Chlordane	57749	0.5mg/m ³	Odorless	0.00001 mm	Insoluble
___ DBCP	96123	1 ppb	N/A	0.3 mm	0.1 %
___ DDT	50293	1 mg/m ³	2.9mg/m ³	0.00000017 mm	0.00001 %
___ Dieldrin	60571	0.25mg/m ³	0.41 ppm	0.00000018 mm	10 ppb
___ Endrin	72208	0.1mg/m ³	N/A	0.0000002 mm	160 ppb
___ Ethylene Dibromide	106924	0.13 ppm	10 ppm	11 mm	0.4 %
___ Heptachlor	76448	0.5mg/m ³	0.02 ppm	0.0003 mm	Insoluble
___ Lindane	58899	0.5mg/m ³	3.9mg/m ³	0.0000094 mm	0.001 %
___ Malathion	121755	10mg/m ³	10mg/m ³	0.00004 mm	0.0145 %
___ Parathion	56382	0.1mg/m ³	0.48mg/m ³	0.0004 mm	0.00002 %

CAS # = Chemical Abstract Services Number

PEL = OSHA Permissible Exposure Limit

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HEALTH EFFECTS

Chemical	Health Effects	Target Organs	Chemical	Health Effects	Target Organs
Acetone	4,6,8,11,16,21	J,X	Aldrin	Ca,2,3,7,11,15	D,G,I,X
Benzene	Ca,1,4,8,11,15,17,18	C,D,E,I,X	Carbaryl	1,3,5,13,15,22	D,I,X
Chloroform	Ca,7,8,11,15	E,G,I,X	Chlordane	1,3,5,15,22	D,E,G,H,I,X
Coal Tar Naphtha	4,8,16	E,I,X	DBCP	Ca,8,15,16,21,22	D,G,I,X
Ethylbenzene	2,4,8,11	D,E,I,X	DDT	Ca,1,7,8,22	D,G,I,X
Hexane	4,8,10,11,12,16	E,H,I,X	Dieldrin	Ca,2,3,7,11,15,22	D,G,I,X
Hydrogen Sulfide	2,3,7,8,9,11,17	E,I	Endrin	1,3,7,15,22	D,G
Methylene Chloride	8,9,12,14,21	D,E,I	Ethylene Dibromide	Ca,4,8,17	E,G,I,I,X
Methyl Ethyl Ketone	7,8,11,16,22	D,H	Heptachlor	3	D,G
PCBs	Ca,4,8	E,G,X	Lindane	3,4,8,16	B,D,E,G,I,X
Petroleum Distillates	7,8,11,16,21	D,E,I,X	Malathion	1,5,8,13,15,22	B,D,G,I
Phenol	3,4,8,16,21	G,I,X	Parathion	1,3,4,5,11,13,15,19	B,D,E,I,X
Tetrachloroethylene	Ca,7,8,11,16,20	D,E,G,I,I			
Toluene	4,6,11	D,G,I,X			
1,1,1-Trichloroethane	4,8,11	D,E,X			
Trichloroethylene	Ca,4,8,11,15,22	D,G,I,I,X			
Vinyl Chloride	Ca,1	B,D,G,I			
Xylene	1,5,8,15,18,21	B,D,E,G,I,X			

Metal	CAS #	PEL	Health Effects	Target Organs
Arsenic, inorganic	7440382	0.01 mg/m ³	Ca, 4, 17, 20	G, H, I, X
Asbestos	1332214	0.2 fibers/cc	Ca, 17	H
Chromium VI	7440473	0.05 mg/m ³	Ca, 17	J
Copper	7440508	1.0 mg/m ³	4,8,16,21	G,I,I,X
Cyanide	151508	5.0 mg/m ³	4,8,11,15,17,20	D,E,I,X
Lead	7439921	0.05 mg/m ³	1	B,D,I
Mercury	7439976	0.05 mg/m ³	4,8,9,11	D,E,I,I,F
Phosphorous	7723140	0.1 mg/m ³	1,8,17	B,E,G,I,I,X
Polynuclear Aromatics (coal tar pitch volatiles)	8007452	0.2 mg/m ³	Ca, 4	A,I,I,X
Silica (crystalline)	14808607	0.05 mg/m ³	17	J

CAS # = Chemical Abstract Services Number

PEL = OSHA Permissible Exposure Limit

HEALTH EFFECTS

- | | |
|-------------------|------------------------------|
| 1. Abdominal Pain | 13. Miosis (Pinpoint Pupils) |
| 2. Coma | 14. Narcosis |
| 3. Convulsions | 15. Nausea |
| 4. Dermatitis | 16. Nose Irritation |
| 5. Diarrhea | 17. Respiratory Irritant |
| 6. Dilated Pupils | 18. Staggering Gait |
| 7. Dizziness | 19. Sweating |
| 8. Eye Irritation | 20. Tearing |
| 9. Fatigue | 21. Throat Irritation |
| 10. Giddiness | 22. Vertigo |
| 11. Headache | 23. Vomiting |
| 12. Light Headed | Ca Carcinogen |

TARGET ORGANS

- | |
|---------------------------|
| A. Bladder |
| B. Blood |
| C. Bone Marrow |
| D. Central Nervous System |
| E. Eyes |
| F. Heart |
| G. Liver |
| H. Lungs |
| I. Kidneys |
| J. Respiratory System |
| K. Skin |

